CLAIMS

What is claimed is:

1. A receiver for a communication system comprising:

a de-noising circuit for extracting information from a received signal with minimal loss due to noise which includes:

a transformer which correlate the received signal to a wavelet function and produces wavelet decomposition coefficients;

a threshold circuit, responsive to the received signal, which for applies predetermined threshold values based on the type of signal; and

a filter coupled to the transformer and the threshold circuit, which alters the wavelet decomposition coefficients produced by the transformer using threshold values applied by the threshold circuit to produce altered wavelet coefficients from which the received signal is reconstructed with reduced noise.

2. The receiver of claim 1 further including:

a demodulator for demodulating a reconstructed reduced noise signal output form said de-noising circuit to produce a demodulated signal;

a demodulated signal property collector, associated with the demodulator, which outputs signal metrics to said threshold circuit; and

said threshold circuit has circuitry which adjusts the applied threshold values in response to signal metrics output from the said collector outside a predetermined range.

3. The receiver of claim 2 wherein said threshold circuit comprises:

a first memory device which stores predetermined initial threshold values; and

a second memory device which compares signal metrics to said predetermined range and determined adjustments to applied threshold values, said predetermined range being based on the type of signal.

4. The receiver of claim 3 wherein said de-noising circuit further comprises an inverse transformer, coupled to said filter, which reconstructs a received signal in response to altered wavelet coefficients from said filter and outputs a reconstructed signal to said demodulator.

5. The receiver of claim 1 further including a demodulator which demodulates a reconstructed reduced noise signal output from said de-noising circuit to produce a demodulated signal including recovered information from said received signal.

6. The receiver of claim 5 wherein said de-noising circuit further comprises an inverse transformer, coupled to said filter, which reconstructs a received signal in response to altered wavelet coefficients from said filter and outputs a reconstructed signal to said demodulator.

7. A method for processing a received communication signal with minimal loss due to noise comprising the steps of:

correlating a received signal to a wavelet function and producing wavelet decomposition coefficients;

determining a type of the received signal;

applying predetermined threshold values based on the type of received signal; and

altering the wavelet coefficients using the applied predetermined threshold values to produce altered wavelet coefficients from which the received signal is reconstructed with reduced noise.

8. The method of claim 7 further comprising the steps of:

reconstructing the received signal in response to said altered wavelet coefficients; and

demodulating the reconstructed received signal to produce a demodulated signal including recovered information from the received signal.

9. The method of claim 7 further comprising the steps of:

demodulating a reconstructed reduced noise signal to produce a demodulated signal;

collecting signal metrics of said demodulated signals; and

adjusting the applied threshold values in response to collected signal metrics outside a predetermined range to thereby adjust said altering of the wavelet coefficients.

10. The method of claim 7 further comprising the steps of:

reconstructing the received signal in response to said altered wavelet coefficients; and

comparing said signal metrics to said predetermined range and determining said adjustment to said applied threshold values, wherein said predetermined range is based on the type of signal.

11. A de-noising circuit of a receiver for extracting information from a received signal with minimal loss due to noise, comprising:

a transformer for correlating the received signal to a wavelet function and producing wavelet decomposition coefficients;

a threshold circuit, responsive to the received signal, for applying predetermined threshold values based on the type of signal; and

a filter coupled to the transformer and the threshold circuit, for altering the wavelet decomposition coefficients produced by the transformer using threshold values applied by the threshold circuit to produce altered wavelet coefficients from which the received signal is reconstructed with reduced noise.

12. The de-noising circuit of claim 11 which is associated with a demodulator for demodulating a reconstructed reduced noise signal output from said de-noising circuit to produce a demodulated signal, and a demodulated signal property collector, associated with the demodulator, which outputs signal metrics to said threshold circuit, wherein said threshold circuit has circuitry which adjusts the applied threshold values in response to signal metrics output from the said collector outside a predetermined range.

13. The de-noising circuit of claim 12 wherein said threshold circuit comprises:

a first memory device which stores predetermined initial threshold values; and

a second memory device which compares signal metrics to said predetermined range and determined adjustments to applied threshold values, said predetermined range being based on the type of signal.

14. The de-noising circuit of claim 14 further comprising an inverse transformer, coupled to said filter, which reconstructs a received signal in response to altered wavelet coefficients from said filter and outputs a reconstructed signal to said demodulator.